

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT 10100000 <u>6042</u>	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US02/41546	International filing date (day/month/year) 27 December 2002 (27.12.2002)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC IPC(7): G06F 9/445 and US Cl.: 717/174		
Applicant UNISYS CORPORATION		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>11</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>3</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand 09 August 2004 (09.08.2004)	Date of completion of this report 08 January 2005 (08.01.2005)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Todd Ingberg Telephone No. (571) 272-3450	

Form PCT/IPEA/409 (cover sheet)(July 1998)

BEST AVAILABLE COPY

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US02/41546

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description:
pages 1-18 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☒ the claims:
pages 19-21, as originally filed
pages 19-21, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☒ the drawings:
pages 1-7, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>6,8,9,15-20</u>	YES
	Claims <u>1-5,7,10-14,21,22</u>	NO
Inventive Step (IS)	Claims <u>6,8,9,15-20</u>	YES
	Claims <u>1-5,7,10-14,21,22</u>	NO
Industrial Applicability (IA)	Claims <u>NONE</u>	YES
	Claims <u>1-22</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

V. 2. Citations and Explanations:

Claims 1- 5, 7,10-14, 21-22 novelty under PCT Article 33(2) as being anticipated by USPN #6,421,778 Wood et al. (Claim 19 being dependent on claim 9).

1. A method of predicting a quantity of a resource required for the deployment of a software application on a computing system, comprising the steps of providing historical resource utilisation data for deployment of software applications on computing systems, providing a value for a parameter of the computing system relevant to resource utilisation, providing a value for a parameter of the software application relevant to resource utilisation, and utilising the historical resource utilisation data and parameter values to predict the quantity of the resource required for deployment of the software application.

Examiner's Response

Wood see Abstract and Figures 2, 3 and 5. Wood calculates modular application independent program for scalable program with parameter values. Wood sets default values (col 6, lines 50-60) and recalculates (col 6, lines 60-70).

2. A method in accordance with claim 1, wherein the historical resource utilisation data includes parameter values of the computing systems and parameter values of the software applications historically deployed.

Examiner's Response

Wood Abstract uses parameters and stores values as per figure 3.

3. A method in accordance with claim 2, wherein the historical resource utilisation data includes statistics, the statistics being values of the quantities of resources used in the historical deployment.

Examiner's Response

Wood Abstract ability to make scaleable as per claim 1.

4. A method in accordance with claim 3, wherein the historical resource utilisation data includes at least two parameter/statistic pairs for historical deployments.

Examiner's Response

Wood Abstract parameters passed to functions as per figure 2.

5. A method in accordance with claim 3, wherein the relationship between the parameter and statistic pairs is derived by applying a statistical model to the parameter/statistic pairs.

Examiner's Response

Figures 2 and 3 calculation of settings.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

7. A method in accordance with claim 5, wherein the relationship between the statistic and the parameter or n parameters is determined by assuming that the relationship between the parameter/statistic pairs takes the form of a straight line.

Examiner's Response

Calculation of baseline(linear) Figure 3.

10. A computing system arranged to facilitate the prediction of a statistic for use in the prediction of resources required for the deployment of a software application, comprising, a database arranged to provide historical resource utilisation data for deployment of software applications on computing systems, means for providing a value for a parameter of the computing system relevant to resource utilisation, and a value for a parameter of the software application relevant to resource utilisation, and computation means arranged to utilise the historical resource utilisation data and parameter values to predict the quantity of the resource required for deployment of the software application.

Examiner's Response

As per claim 1

11. A system in accordance with claim 10, wherein the historical resource utilisation data includes parameter values of the computing systems and parameter values of the software applications historically deployed.

Examiner's Response

As per claim 2.

12. A system in accordance with claim 11, wherein the historical resource utilisation data includes statistics, the statistics being values of the quantities of resources used in the historical deployment.

Examiner's Response

As per claim 3.

13. A system in accordance with claim 12, wherein the historical resource utilisation data includes at least two parameter/statistic pairs for historical deployments.

Examiner's Response

As per claim 3.

14. A system in accordance with claim 13, wherein the relationship between the parameter and statistic pairs is derived by applying a statistical model to the parameter/statistic pairs.

Examiner's Response

As per claim 5.

21. A method for building a model for use in the prediction of resources required for the deployment of a software application, the method comprising the steps of collecting historical resource utilisation data for deployment of software applications on computing systems, and storing the historical resource usage data.

Examiner's Response

As per claim 1.

22. A model comprising historical resource utilization data for deployment of software applications on computing systems, the data being stored in a database.

Examiner's Response

Figure 3 store historic values in Table Data store and Optimal Settings in data store as well as Temporary Data Store use. Also see figure 6a, 6b , 6c, 6d, 6e and 7b.

Claims 1- 22 novelty under PCT Article 33(2) as a lack of unity for failing to be on a computer readable medium and executing on a computer.

Claims 6,8,9,15-20 have a positive statement over wood for disclosing the relationship and definitions of the calculation parameters of the equation used as the basis of the invention.

----- NEW CITATIONS -----

Continuation of Section VII. Certain defects:

Form PCT/IPEA/409 (Continuation Sheet) (July 1998)

BEST AVAILABLE COPY

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

APPLICANT'S REMARKS. On the BASIS OF THE OPINION

"In response to the PCT Written Opinion dated 16 September, 2004, Applicants are herein presenting their considerations and arguments in regard to the Examiner's evaluation of the originally provided claims.

The Examiner has entered that claims 1-5, 7-14, 21 and 22, have been anticipated by U.S. Patent 6,421,778 to Wood. et al.

The Examiner has cited certain factors of the Wood reference, such as the Abstract and Figs. 2, 3 and 5, and stated that Wood calculates modular application-independent programs for a scaleable program with parameter values and Wood sets default values, as stated in column 6, lines 50-60, and does re-calculations at column 6 lines 60-70.

In regard to these factors, Applicants would traverse Examiner consideration as to the factor of anticipation, as will be subsequently illustrated.

Also, in regard to Applicant's claim 22, Examiner "contends" that Fig. 3 of the Wood reference would store historic values in a Table Data store, plus Optimal Settings in a data store, as well as a temporary data store while referring to Wood, Figs. 6a, 6b, 6c, 6d, 6e and 7b. It should be noted that Woods Table Data store 220 merely holds features and not historic data.

In this aspect, Applicants would again traverse Examiners consideration that this "Table Data Store", aspect of Wood correlates to any feature of Applicant's invention, as will be discussed hereinafter.

Applicants, at this juncture, would reiterate that they consider that Applicants' independent claims are certainly novel and inventive over the teachings of the Wood reference. Further, Applicants' invention will by seen to have quite a distinctively different purpose from that of the Wood reference."

APPLICANTS REMARKS ON THE "CLAIMED INVENTION"

"Applicants' invention in the present PCT application is directed to a method and system for estimating resource usage. The term "resource" here encompasses almost any computing-related parameter, (including that of "time") in the deployment of a software application on any particular type of computing system.

In its broadest claimed aspect, Applicants, invention is directed to calculating the resources required to deploy a software application. Applicants, methodology broadly includes the steps of

- (a) Providing historical data with regard to the resource utilization during deployment of the software application;
- (b) Providing a value for a parameter relevant to the subject of resource utilization:
- (c) Providing a value for a parameter relevant to the software application involved: and
- (d) Using the data and values obtained in

steps (a)-(c) to predict quantity (quantifiable amount) of resources required for the deployment of the particular software application.

An embodiment of this methodology, is shown in Applicants', Fig 3 which very clearly outlines the method steps involved."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

APPLICANT'S ARGUMENTS ON NOVELTY ASPECTS:

POINT ONE

"The Examiner seems to reason that claims 1-5, 7, 10-14, 21 and 22, are not novel in view of the Wood reference U.S. Patent 6,421,778. But note that the Wood reference describes a method for optimising a software program, by taking advantage of the full feature set of the hardware. This is achieved by analyzing the hardware and subsequently changing the software settings in order to make best use of the hardware. While superficially there are some similarities between the Wood method and Applicants' method claimed in claim 1, but it should be noted there are still exceptionally substantial differences involved between the two separate methodologies.

First, it should be noted that each claimed invention (as between Wood and Applicants) has a very different purpose. The Wood methodology attempts to modify a software application in order to make best use of the available hardware resources. That is to say, Wood describes a methodology for optimising a software application in view of the limitations of the hardware.

Applicants' claimed invention, in great contrast, is directed to predicting the time taken (or the resources required) to deploy a software application. Thus., the Wood reference is directed to a very different problem and discloses a very different subject matter. It is quite difficult to see how the Wood reference can be considered analogous art when compared to Applicants' claimed invention."

EXAMINER'S RESPONSE

Applicant's claim language is directed broadly toward the "deployment of a software application on a computer system" (claim 1). The claim language does not limit the term deployment to installation of software with key industry terms such as installation, configuration management, change management etc. The term deployment in the wood reference is the deployment of the software in a computer system where the software is not only deployed but also redeployed as a result of optimization based on actual usage (historical data). Furthermore, the context of claim is further not claimed by requiring the deployment to be over a network. These failures left the context of the term deployment open to interpretation. In Wood software is deployed on a computer system and redeployed based on historical data. This deployment and redeployment is a form of optimization. And directly relates to predicting the quantity of resources for the proper optimization. Also, the broad claim language does not state the intention is the optimization of time. Only in the Applicant's arguments when the Applicant draws on the intent from the Specification does this appear. It is not clearly claimed. This fact also, impacts the Industrial Applicability of the invention as discussed below. Wood can be argued to improve the resources of time and computer resources by redeploying based on optimization estimates (predictions). Despite the different problems the invention and Patent are to solve the claim language reads on the reference.

POINT TWO

"Secondly, there is no disclosure in the Wood reference of providing "historical data" with regard to previous software deployments. This feature is missing in Wood, because the Wood invention does not require historical data with regard to the development of the software application involved, as Wood is not concerned with the resources required to deploy a software application.

As noted in the Wood reference at column 7, lines 26-48 regarding the Table Data Store (line 41) --- System 205 inserts the feature, setting, tag, cost and benefit into Data store 220 ---.

The Data Store 220 is not historical data, but only a table of features."

EXAMINER'S RESPONSE

BEST AVAILABLE COPY

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

As mentioned above. Optimization is based on historical usage. This is an inherent aspect of the Wood reference and mentioned by Applicant to exist below.

POINT THREE

"Thirdly, Wood does not attempt to calculate the resources required to deploy a software application. As previously stated, Wood is concerned with optimizing a software application in view of the hardware of a computer system, such that software application may then take full advantages of the hardware. Thus, in Wood, there is no need to calculate the amount of resources required for deployment of a software application, as Wood is not concerned with the deployment of software.

It is conceivably arguable that the Wood reference does describe a process which involves the collection of data in a Manner analogous to the steps (b) and (c) above. However, the Wood reference is concerned with -- optimizing a software application in view of the available hardware.

Applicants' claimed invention, in great contrast, makes no attempt whatsoever to modify a software application. Applicants' invention is concerned with predicting the amount of resource time be utilized in deploying a software application, given certain parameters regarding the software application and the hardware involved."

EXAMINER'S RESPONSE

Examiner disagrees that Wood is not concerned with the deployment of software. With the context unclaimed as stated above Wood's deployment and redeployment of software in a computer system is the primary purpose of Wood's invention.

APPLICANT'S OPINION ON WRITTEN OPINION

"It is most difficult to see how the Examiner can read the Wood disclosure into Applicants' independent claims 1 and 10. Furthermore, as a curious note, it appears the Examiner believes that claim 1 is not novel or inventive, but when the claim 1 methodology is embodied in a computer program, it somehow becomes rendered novel and inventive --for example, the Examiner rejects claim 1, but allows claim 19, which recites a computer program which actually carries out the method of claim, 1."

EXAMINER'S RESPONSE

Applicant's Remarks and Argument's require one to draw from what the Applicant intended to claim and read the Specification into the claim. the actual claim language fails to clearly and concisely claim the intent of the invention. Although, the Applicant's remarks above are well sculpted to direct a reader to understand what they meant to claim the Patent Office can not read your Specification into your claimed invention.

APPLICANT'S CONCLUSION

"Applicants would herein assert that claims 1 and 10 are clearly novel over the Wood reference citation, and additionally, the other claims, by virtue of their dependency on these claims, are also novel."

EXAMINER'S POSITION

The claimed invention has gone unclaimed. The context of the invention is so broad the claimed invention is open to interpretation despite the Applicant's initial intentions. The argument's are not persuasive.

APPLICANT'S ARGUMENT REGARDING CLAIMS 21 AND 22

"Regarding Applicants' claims 21 and 22, Applicants would wish to indicate that while the Wood reference discloses a database which stores optimization data, it should be indicated that this is not equivalent to the special feature recited in claim 21 which refers to:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

"Collecting historical resource utilization data for deployment of software applications".

The database utilized in the Wood reference is utilized to collect data regarding the optimal settings for a particular item of software in view of the hardware available of a particular machine. Therefore, it is contended that the Wood reference does not read onto claims 21 and 22. So, in this regard, the Examiner's novelty objection could not be deemed sustainable."

EXAMINER'S RESPONSE

With the scope of the claimed invention not limiting the term "deployment of software applications", the claimed invention fails to distinguish itself from the Wood reference. The Applicant's term special features is not concise. What the Applicant characterizes as Wood's settings is deployment data. How to optimally deploy applications in the computer system.

APPLICANT'S ARGUMENT REGARDING OBVIOUSNESS (Inventive STEP)

"It would appear the Examiner has raised an inventive step objection to claims 1-5, 7, 10-14, 21 and 22, on the basis that these are not novel and therefore, not inventive. Now, since the Examiner has provided no substantive on the inventiveness of any of the claims, nor has Examiner explicitly cited any art other than the Wood reference, Applicants do therefore contend that these claims are certainly worthy of being considered as an inventive step."

EXAMINER'S RESPONSE

The grounds of rejection for failing to be found novel are also the grounds for being obvious.

APPLICANT'S ARGUMENTS REGARDING INDUSTRIAL APPLICABILITY:

POINT ONE

"Another factor involved here, is that the Examiner has rejected all the claims on the basis that they are not "industrially applicable" for:
"Failing to be recorded on a computer-readable medium and execute on a computer".

It would appear that the Examiner is rejecting the claims on the basis that some of the claims do not positively recite a "technical feature". This is considered to be a strange objection, as there is no requirement, on a reading of article 33 (d) that: a claimed invention must include the explicit recitation of a technical feature.

Rather, on the other hand, it would seem that industrial applicability is concerned with whether the claimed invention has a "technical character", that is to say, a claimed invention is Industrially applicable if it involves a physical activity which belongs to the useful arts, as opposed to the aesthetic arts.

Applicants' claimed invention clearly falls within the category of a useful art, as it is a technique utilized to determine the time and/or the resources required to deploy a software application to a plurality of computing systems, thereby allowing a deployer to plan and organize the deployments of software in a logical and efficient manner.

Applicants' method finds utility in organizations where a systems administrator is required to provide a new application to a multitude of users in an efficient manner, whilst balancing the need to minimize any interruption to the productivity of the various users."

EXAMINER'S RESPONSE

Several points should be made on Industrial Applicability. One not until claim 19 is the limitation of being on a computer readable medium. The execution of the

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/41546**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

invention is not present in the limitation. Claim 1 starts out "A method of predicting a quantity of a resource required for the deployment of a software application on a computer system" nowhere in the independent claim is the limitation on a computer readable medium or executing on a computer. The resource itself is unclear. This is not useful. The claimed invention is not even clear on what the prediction is attempting to produce, if it is on a computer at all. Is it a prediction by watching the computer run? It is not concrete, tangible or clearly have a useful result. In part because you can't tell what we are trying to predict. Without the what we are only left with "Why".

POINT TWO

"Additionally, the Examiner appears to object to claims 10-18, even though these claims positively recite the supposedly missing technical feature of "executing on a computer". Note, that similarly, claim 19. explicitly describes a computer-readable medium, yet, the Examiner apparently also cites this claim for lack of industrial applicability."

EXAMINER'S RESPONSE

Examiner's response above addresses this argument. In view of Applicant's apparent acknowledgement of a way to attempt to remedy the rejection they elected not to amend the independent claims.

APPLICANT'S CONCLUSION REGARDING INDUSTRIAL APPLICABILITY

"So, in this regard, it is believed that the Examiner should reconsider these claims in a more expansive fashion and then understand that the industrial applicability objection cannot reasonably be sustained."

EXAMINER'S RESPONSE

The Examiner's opinion is the Applicant failed to clearly and concisely claim the invention. Applicant has elected to invite the reader to read the Specification into the claims. Applicant did not appear to make an attempt to amend to correct the deficiency they appear to acknowledge in claim 19. But amending the independent claims. Applicant's arguments are not persuasive.

CONCLUSION:

"In view of the preceding discussion and arts, it should be indicated that there is a substantial difference in purposes involved and other technical differentiation between the cited reference to Wood, and the system and methodology of applicants. These involve certain new, inventive, and differentiate factors, which, it is respectfully requested that Examiner should review and appreciate the useful and novel features thereof and subsequently provide a timely Notice of Allowance therefore."

EXAMINER'S DISPOSITION

The Opinion of the U.S. Patent Office is maintained.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US02/41546

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Please See Continuation Sheet

PCT/US02/41546.03112004

11/09/2004 10:58 215

UNISYS 1620 Rec'd PCT/PTO 27 JUN 2005

1PBA/US

-19-

CLAIMS:

1. A method of predicting a quantity of a resource required for the deployment of a software application on a computing system, comprising the steps of providing historical resource utilisation data for deployment of software applications on computing systems, providing a value for a parameter of the computing system relevant to resource utilisation, providing a value for a parameter of the software application relevant to resource utilisation, and utilising the historical resource utilisation data and parameter values to predict the quantity of the resource required for deployment of the software application.
2. A method in accordance with claim 1, wherein the historical resource utilisation data includes parameter values of the computing systems and parameter values of the software applications historically deployed.
3. A method in accordance with claim 2, wherein the historical resource utilisation data includes statistics, the statistics being values of the quantities of resources used in the historical deployment.
4. A method in accordance with claim 3, wherein the historical resource utilisation data includes at least two parameter/statistic pairs for historical deployments.
5. A method in accordance with claim 3, wherein the relationship between the parameter and statistic pairs is derived by applying a statistical model to the parameter/statistic pairs.
6. A method in accordance with claim 4, wherein a relationship is predicted between a statistic and n distinct parameters, where n is any integer greater than or equal to two, comprising the further step of obtaining m_n different values for each parameter P_n , and further obtaining at least $m_1 m_2 \dots m_n$ values of a statistic for each distinct combination of parameter values, where $m_1 m_2 \dots m_n$ represents the product of values m_1, m_2, \dots, m_n .
7. A method in accordance with claim 5, wherein the relationship between the statistic and the parameter or n

AMENDED SHEET

1PBA/US

-20-

parameters is determined by assuming that the relationship between the parameter/statistic pairs takes the form of a straight line.

8. A method in accordance with claim 6, wherein the equation of the straight line is calculated using co-ordinate geometry.

9. A method in accordance with claim 7, wherein said statistical model mathematically takes the form:

$$S = S_A + \frac{(S_c - S_A)}{(C - a)} (P_k - a)$$

10. A computing system arranged to facilitate the prediction of a statistic for use in the prediction of resources required for the deployment of a software application, comprising, a database arranged to provide historical resource utilisation data for deployment of software applications on computing systems, means for providing a value for a parameter of the computing system relevant to resource utilisation, and a value for a parameter of the software application relevant to resource utilisation, and computation means arranged to utilise the historical resource utilisation data and parameter values to predict the quantity of the resource required for deployment of the software application.

11. A system in accordance with claim 10, wherein the historical resource utilisation data includes parameter values of the computing systems and parameter values of the software applications historically deployed.

12. A system in accordance with claim 11, wherein the historical resource utilisation data includes statistics, the statistics being values of the quantities of resources used in the historical deployment.

13. A system in accordance with claim 12, wherein the historical resource utilisation data includes at least two parameter/statistic pairs for historical deployments.

14. A system in accordance with claim 13, wherein the

AMENDED SHEET

1PBA/US

-21-

relationship between the parameter and statistic pairs is derived by applying a statistical model to the parameter/statistic pairs.

15. A system in accordance with claim 14, wherein a relationship is predicted between a statistic and n distinct parameters, where n is any integer greater than or equal to two, comprising the further step of obtaining m_n different values for each parameter P_n , and further obtaining at least $m_1 m_2 \dots m_n$ values of a statistic for each distinct combination of parameter values, where $m_1 m_2 \dots m_n$ represents the product of values m_1, m_2, \dots, m_n .

16. A system in accordance with claim 15, wherein the relationship between the statistic and the parameter or n parameters is determined by assuming that the relationship between the parameter/statistic pairs takes the form of a straight line.

17. A system in accordance with claim 16, wherein the equation of the straight line is calculated using co-ordinate geometry.

18. A system in accordance with claim 17, wherein said equation involves a statistical model which mathematically takes the form:

$$S = S_a + \frac{(S_c - S_a)}{(c - a)}(P_x - a)$$

19. A computer program arranged, when loaded on a computing system, to implement the method of claim 1.

20. A computer readable medium providing a computer program in accordance with claim 19.

21. A method for building a model for use in the prediction of resources required for the deployment of a software application, the method comprising the steps of collecting historical resource utilisation data for deployment of software applications on computing systems, and storing the historical resource usage data.

22. A statistical model comprising historical resource utilisation data for deployment of software applications on computing systems, said data being stored in a database.

AMENDED SHEET